PLIN 2016 Abstract

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The Able-to-Include project seeks to improve the lives of people with Intellectual or Developmental Disabilities (IDD). In order to be included in today's society, it is becoming increasingly important to be able to use the current available technological tools. The number of apps is growing exponentially, but very few are really accessible to people with IDD. Able-to-Include is creating a context-aware Accessibility Layer based on three key technologies that can improve the daily tasks of people with IDD and help them interact with the Information Society. These technologies are a text and content simplifier, pictograph translation technologies, and text-to-speech funtionalities. The integration of this Accessibility Layer with existing ICT tools will be tested in three different pilots in Spain, Belgium and the UK.

Social media presents many challenges and concerns for people with IDD, their families and caregivers regarding data protection for this particular group. Able-to-Include users indicated very clearly their desire to interact with their friends and family on social media, especially Facebook, Twitter, and WhatsApp. While using social media websites, the user can highlight (or hover their finger over a word) and see its meaning as a pictograph, or select a sentence to get its simplified or spoken version.

Within the Able-to-Include project, KU Leuven is responsible for the development of the Text-to-Pictograph and Pictograph-to-Text translation tools. The Text-to-Pictograph translation tool translates Dutch, English, and Spanish text into a series of Sclera or Beta pictographs. Additional to a shallow source language analysis, we use WordNets to link pictographs to groups of synonyms and retrieve appropriate or semantically related pictographs in the translation process. The system allows social media text to be converted into pictographs with a single tap.

The Pictograph-to-Text translation system provides help in constructing Dutch, English, and Spanish textual messages by allowing the user to introduce a series of pictographs and translates these messages into natural language using WordNet synsets and a trigram language model. So far, we have developed two different input methods. The first approach offers a static hierarchy of pictographs, while the second option scans the user input and dynamically adapts itself to suggest appropriate pictographs. When using social media websites, users have access to the Accessibility Layer to construct pictograph messages using the hierarchy and the predictor. Their messages will be converted to natural language text, which can be posted on the website.

Some users have the ability to write short messages without having to rely on the pictograph selection menu. While it is important to encourage people with IDD to write their own messages if they are able to do so, their writings may pose several problems. We built the first version of an automated spelling corrector that is specifically tailored to Dutch users with IDD. However, our solutions are useful for other users as well, such as immigrants or elderly people experiencing serious orthographic problems. We should not forget that the next generation will also be addicted to social media.